

CLAIMS

1. A laser beam inspection apparatus, comprising:

a constant voltage source, having a power supply line to flow therein a predetermined amount of current, for applying a constant amount of voltage with respect to a sample disposed on said power supply line;

a laser source for producing a laser beam to be irradiated to a predetermined area on a surface of the sample;

a laser scanning unit for scanning the laser beam along the surface of the sample;

a magnetic field detecting apparatus for detecting a change in a magnetic field developed by a current passing through said power supply line; and

a system controller for specifying a changed area in a value of resistance on the sample, based on both an irradiation position of the laser beam and the change in the magnetic field in said power supply line detected by said magnetic field detecting apparatus.

2. A laser beam inspection apparatus according to claim 1, wherein said magnetic field detecting apparatus includes one of a SQUID flux meter, a Hall element magnetic sensor, a flux gate sensor, a pickup coil-type magnetic sensor, a MO element sensor, a MR element sensor, a GMR element sensor and a TMR element sensor.

3. A laser beam inspection apparatus according to claim 1 or 2, further comprising a mounting structure for mounting said magnetic field detecting apparatus to a predetermined area of said power supply line.

4. A laser beam inspection apparatus according to any one of

claims 1 to 3, further comprising an amplifier for amplifying a magnetic field detection signal from said magnetic field detecting apparatus.

5 5. A laser beam inspection apparatus according to any one of claims 1 to 4, further comprising a noise removing device for removing a noise contained in a magnetic field detection signal from said magnetic field detecting apparatus.

6. A laser beam inspection apparatus according to any one of claims 1 to 3, further comprising:

10 an amplifier for amplifying a magnetic field detection signal from said magnetic field detecting apparatus; and

 a lock-in amplifier including a noise removing device which removes a noise contained in a magnetic field detection signal from said magnetic field detecting apparatus.

7. A laser beam inspection apparatus, comprising:

15 a constant current supply, having a power supply line for passing through a constant amount of current, for applying a predetermined amount of voltage to a sample disposed on said power supply line;

 a laser source for producing a laser beam to be irradiated to a predetermined area on a surface of the sample;

20 a laser scanning unit for scanning the laser beam along the surface of the sample;

 an electric field detecting apparatus for detecting a change in an electric field caused by a voltage applied to the sample; and

25 a system controller for specifying a changed area in the value of resistance on the sample, based on both an irradiation position of the laser beam and the change in the electric field detected by said electric

field detecting apparatus.

8. A laser beam inspection apparatus according to claim 7, wherein said electric field detecting apparatus includes an EO element.

5 9. A laser beam inspection apparatus according to claim 7 or 8, further comprising a mounting structure for mounting said electric field detecting apparatus to a predetermined area of said power supply line.

10 10. A laser beam inspection apparatus according to any one of claims 7 to 9, further comprising an amplifier for amplifying an electric field detection signal from said electric field detecting apparatus.

11. A laser beam inspection apparatus according to any one of claims 7 to 10, further comprising a noise removing device for removing a noise contained in an electric field detection signal from said electric field detecting apparatus.

15 12. A laser beam inspection apparatus according to any one of claims 7 to 8, further comprising:

an amplifier for amplifying an electric field detection signal from said electric field detecting apparatus; and

20 a lock-in amplifier including a noise removing device which removes a noise contained in an electric field detection signal from said electric field detecting apparatus.